SA-WMSP1

SERVICE MANUAL

Ver 1.0 2001.03

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model
Chinese Model

SPECIFICATION

System

Type
Active Subwoofer (magnetically shielded design)

Speaker unit
Woofer: 20 cm dia. (8 in.), cone type

Amplifier section
Continuous RMS output :

Canadian model (0.8%) 50W

European model (DIN) 50 W

Other models (0.8%) 50 W

Reproduction frequency range
28 Hz – 200 Hz

Inputs

Input jacks
LINE IN: input pin jack

General

Power requirements
Canadian model: 120 V AC, 60 Hz

European model: 230 V AC, 50/60 Hz

Power consumption
50 W

Dimensions
Approx. 270 x 325 x 385 mm

(10 3/4 x 12 7/8 x 15 1/4 in.) (w/h/d)

Mass
10 kg (22 lb 1oz)

Design and specifications are subject to change without notice.

ACTIVE SUBWOOFER

9-873-847-11
2001C0900-1
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Sony Corporation
Audio Entertainment Group
General Engineering Dept.

SONY®

SAFETY CHECK-OUT
(US model)

After correcting the original service problem, perform the following safety checks before releasing the set to the customer: Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.

2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.

3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

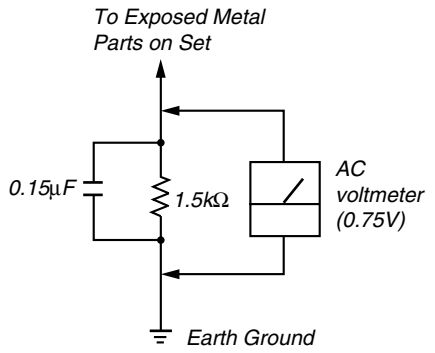

Fig. A. Using an AC voltmeter to check AC leakage.

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SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SECTION 1
GENERAL

• Location of controls

– Top view (a part) –

1 POWER button
2 POWER indicator
3 LEVEL dial

SECTION 2
DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

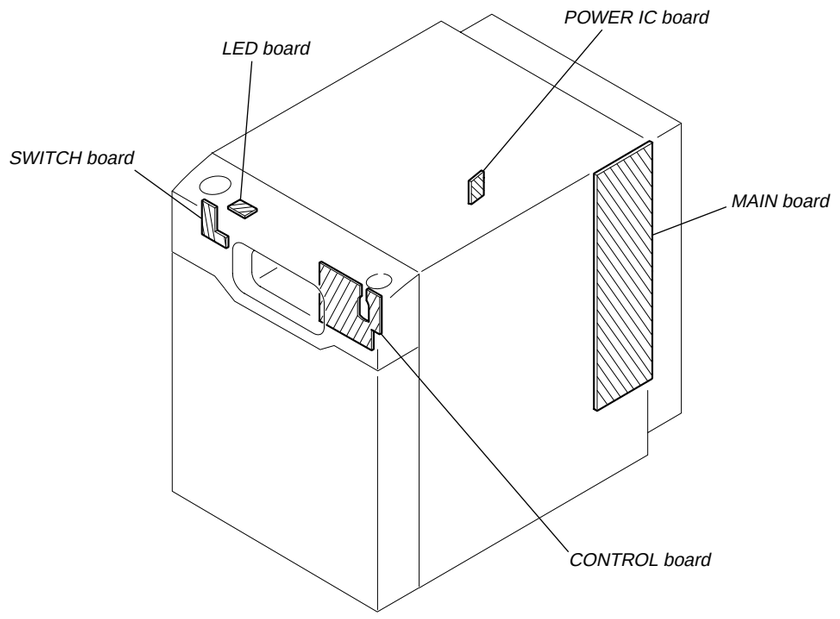
For printed wiring boards.
Note:
- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ▒▒▒ : Pattern from the side which enables seeing.

For schematic diagrams.
Note:
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- ▭ : panel designation.

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

- ——— : B+ Line.
- - - - : B– Line.
- Voltages are dc with respect to ground under no-signal conditions.
  no mark : Power on
  * : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : AUDIO
- Abbreviation
  CND : Canadian model
  SP : Singapore model
  MX : Mexican model
  AUS : Australia model

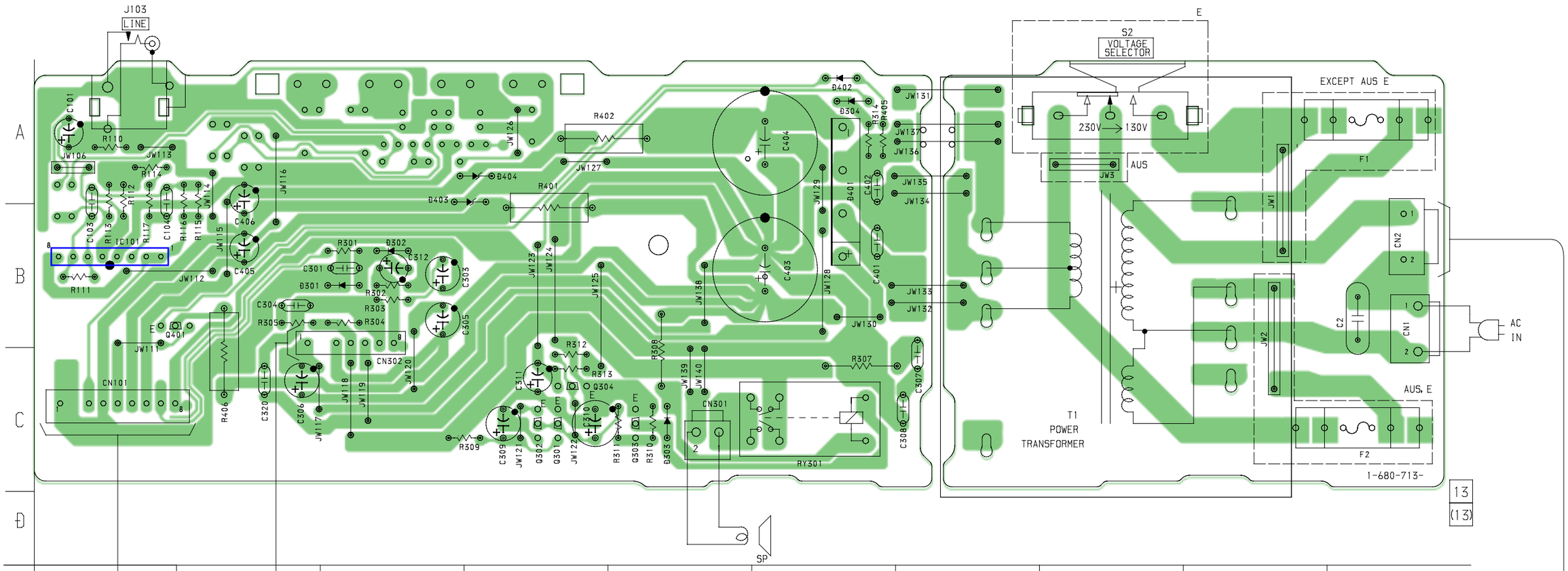
2-1. Circuit Boards Location



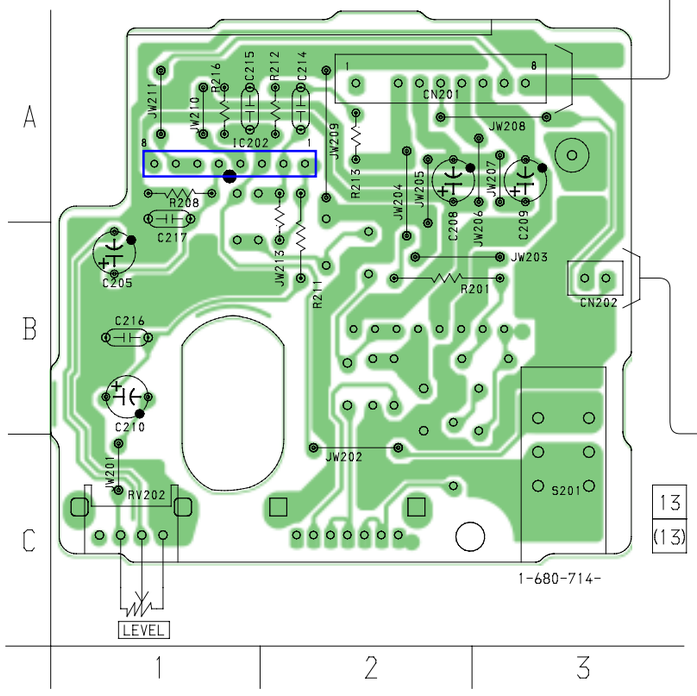
2-2. PRINTED WIRING BOARD

• See page 3 for Circuit Boards Location.

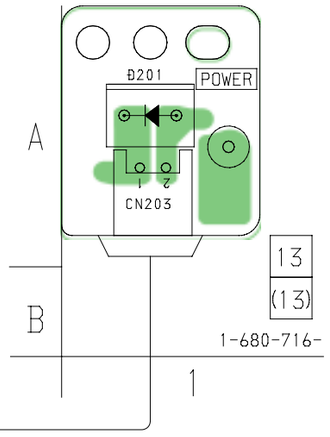
【MAIN BOARD】



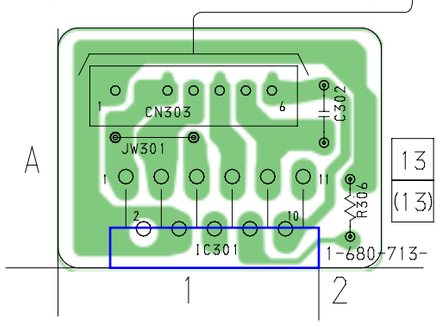
【CONTROL BOARD】



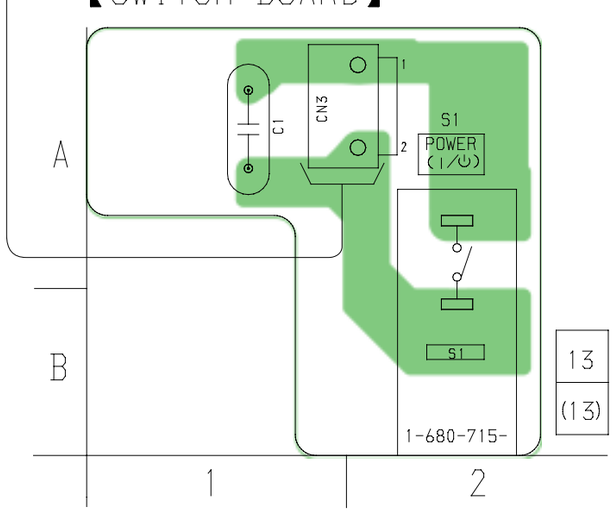
【LED BOARD】



【POWER IC BOARD】



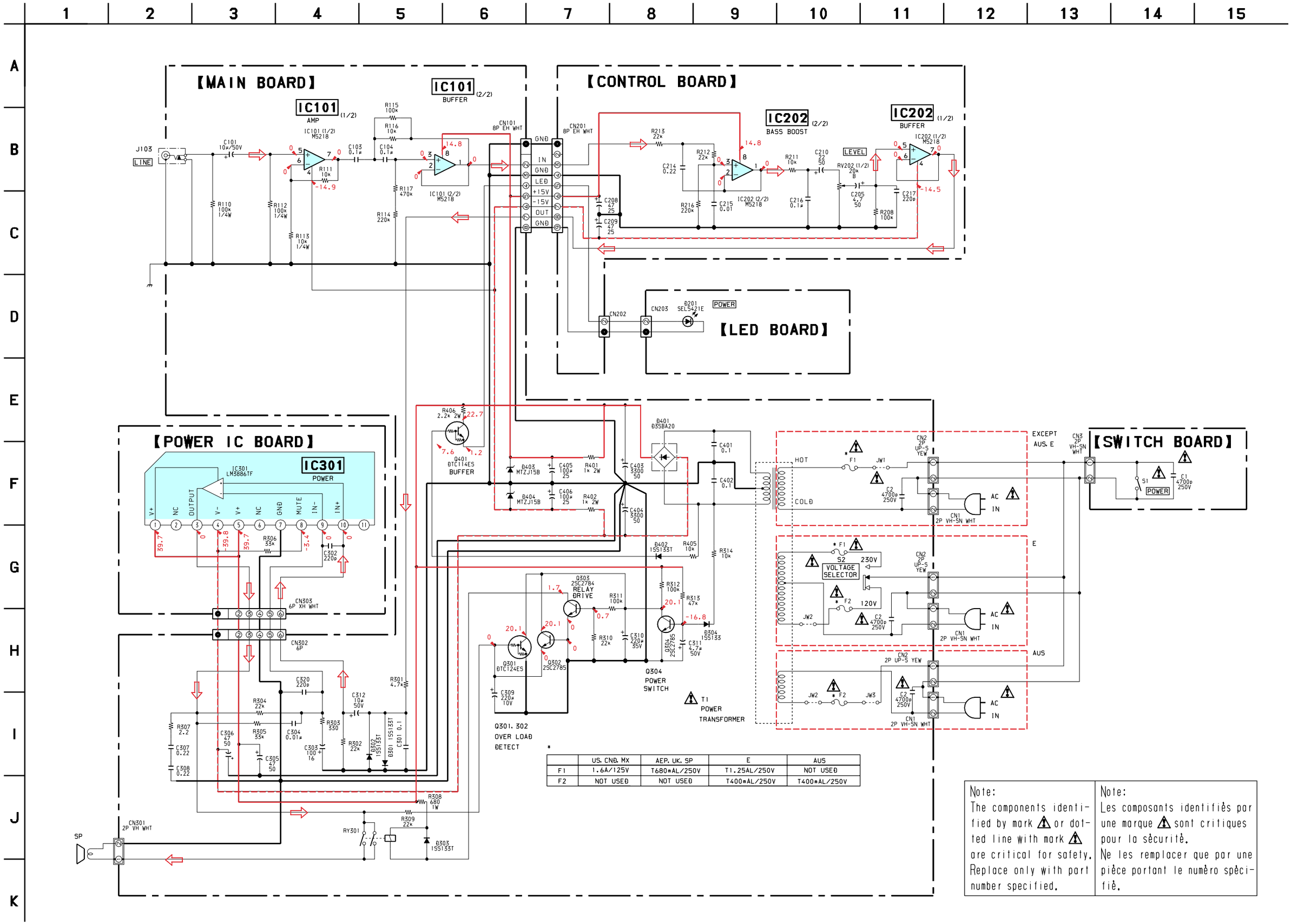
【SWITCH BOARD】



- **Semiconductor Location**

Ref. No.	Location
D301	B-3
D302	B-3
D303	C-5
D304	A-6
D401	A-6
D402	A-6
D403	A-3
D404	A-3
IC101	B-1
Q301	C-4
Q302	C-4
Q303	C-5
Q304	C-4
Q401	B-1

2-3. SCHEMATIC DIAGRAM



	US. CND. MX	AEP. UK. SP	E	AUS
F1	1.6A/125V	T680mAL/250V	T1.25AL/250V	NOT USED
F2	NOT USED	NOT USED	T400mAL/250V	T400mAL/250V

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

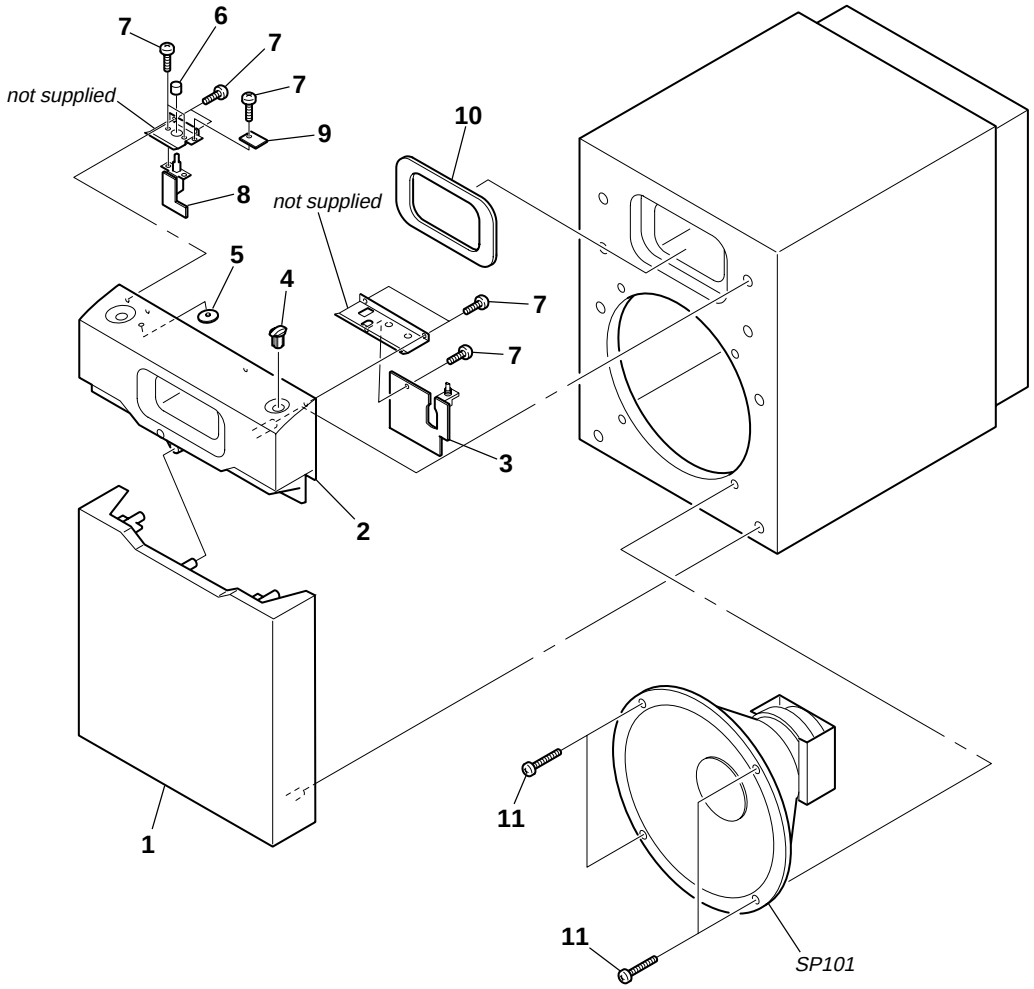
SENTION 3
EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of the electrical parts list.
- Abbreviation
  CND : Canadian model
  SP : Singapore model
  MX : Mexican model
  AUS : Australia model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

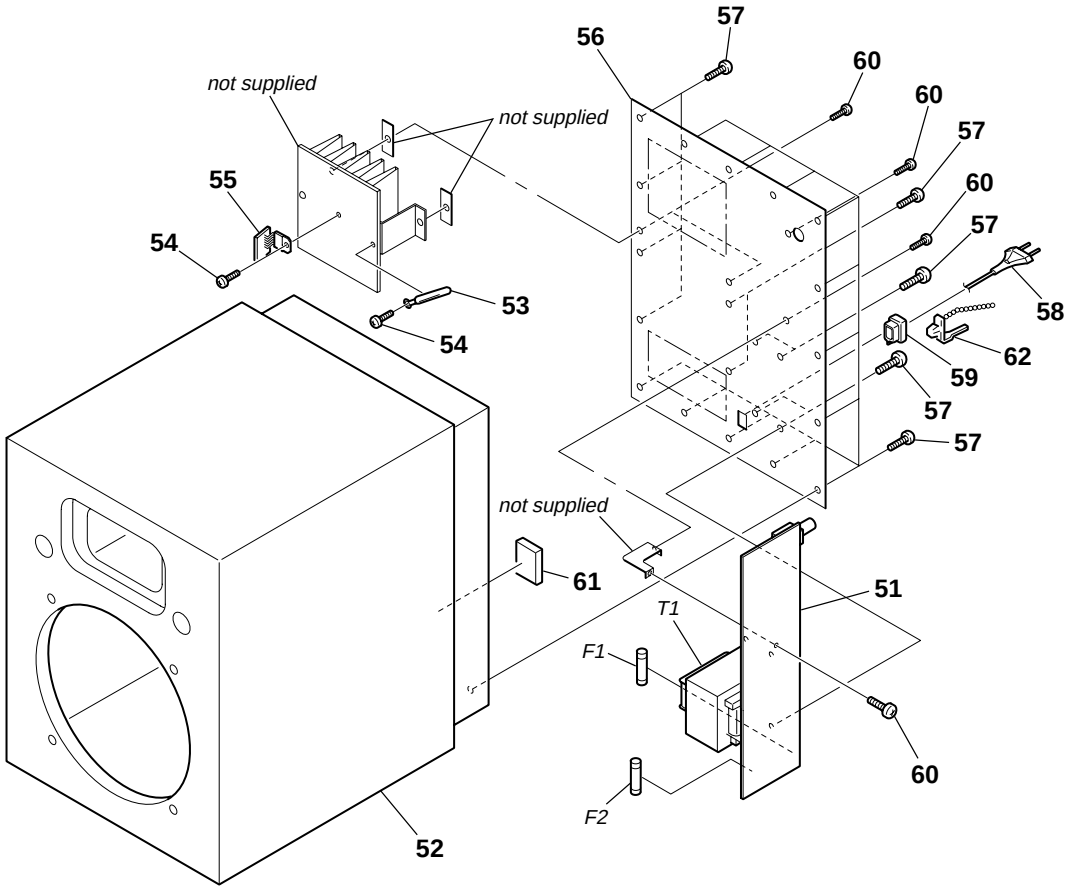
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

3-1. FRONT SECTION



Ref. No.	Part No.	Description	Remark
1	X-4953-515-1	FRAME(SILVER) ASSY, GRILLE (SILVER)	
1	X-4953-516-1	FRAME(BLACK) ASSY, GRILLE (BLACK)	
2	4-232-530-01	PANEL, FRONT (SILVER)	
2	4-232-530-11	PANEL, FRONT (BLACK)	
3	1-680-714-13	CONTROL BOARD	
4	4-232-527-01	KNOB,VOLUME (SILVER)	
4	4-232-527-11	KNOB,VOLUME (BLACK)	
5	4-232-531-01	PLATE, LIGHT GUIDE	
6	4-973-938-81	KNOB(A), PUSH (SILVER)	
6	4-973-938-91	KNOB(A), PUSH (BLACK)	
7	7-685-647-79	SCREW+BVTP 3X10 TYPE2 IT-3	
8	1-680-715-13	SWITCH BOARD	
9	1-680-716-13	LEDBOARD	
10	4-232-534-01	PACKING (DUCT)	
11	4-235-677-01	SCREW (4X20) (TYPE1)	
SP101	1-529-995-11	SPEAKER (20CM)	

3-2. AMP SECTION



Ref. No.	Part No.	Description	Remark
51	1-680-713-13	MAINBOARD	
52	A-4412-797-A	CABINET ASSY (SILVER)	
52	A-4412-798-A	CABINET ASSY (BLACK)	
* 53	3-703-150-11	CLAMP	
54	7-685-649-79	SCREW +BVTP 3X14 TYPE2 IT-3	
55	1-680-717-13	POWER IC BOARD	
56	4-232-526-11	PANEL, REAR (US)	
56	4-232-526-21	PANEL, REAR (CND)	
56	4-232-526-31	PANEL, REAR (MX)	
56	4-232-526-41	PANEL, REAR (SP,AEP,UK)	
56	4-232-526-51	PANEL, REAR (E)	
56	4-232-526-61	PANEL, REAR (AUS)	
57	7-685-660-19	SCREW +BVTP 4X10 TYPE2 N-S	
⚠58	1-696-845-31	CORD, POWER (AUS)	
⚠58	1-777-071-11	CORD, POWER (SP,AEP,UK)	
⚠58	1-783-525-11	CORD, POWER (TRACKING)(E)	
⚠58	1-783-820-11	CORD, POWER (US,MX,CND)	
* 59	3-703-244-00	BUSHING (2104), CORD	
60	7-685-649-79	SCREW +BVTP 3X14 TYPE2 IT-3	
61	4-234-637-01	CUSHION (TRANSFORMER)	
62	4-956-370-02	BAND, PLUG FIXED (UK)	
⚠F1	1-532-500-31	FUSE (T680mAL/250V)(SP,AEP,UK)	
⚠F1	1-532-502-31	FUSE (T1.25AL/250V)(E)	
⚠F1	1-533-614-11	FUSE, GLASS CYLINDERICAL (1.6A/125V)	(US,MX,CND)
⚠F2	1-532-499-31	FUSE (T400mAL/250V)(E,AUS)	
⚠T1	1-435-879-11	TRANSFORMER, POWER (US,MX,CND)	
⚠T1	1-435-880-11	TRANSFORMER, POWER (SP,AEP,UK)	
⚠T1	1-435-881-11	TRANSFORMER, POWER (E,AUS)	

SECTION 4
ELECTRICAL PARTS LIST

CONTROL | LED | MAIN

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: µH
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... , uPB... , µPB... , uPC... , µPC... , uPD..., µPD...
- Abbreviation
  CND : Canadian model
  SP : Singapore model
  MX : Mexican model
  AUS : Australia model

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remarks
	1-680-714-13	CONTROL BOARD			
		**********			
		< CAPACITOR >			
C205	1-126-963-11	ELECT	4.7uF	20.00%	50V
C208	1-104-664-11	ELECT	47uF	20.00%	25V
C209	1-104-664-11	ELECT	47uF	20.00%	25V
C210	1-126-965-11	ELECT	22uF	20.00%	50V
C214	1-136-169-00	MYLAR	0.22uF	5.00%	50V
C215	1-136-153-00	FILM	0.01uF	5%	50V
C216	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C217	1-102-110-00	CERAMIC	220PF	10%	50V
		< CONNECTOR >			
CN201	1-785-093-11	PIN, CONNECTOR 8P			
		< IC >			
IC202	8-759-634-50	IC M5218AL			
		< VARIABLE RESISTOR >			
RV202	1-227-364-11	RES, VAR, CARBON	20K (LEVEL)		
**********					
	1-680-716-13	LED BOARD			
		**********			
		< CONNECTOR >			
* CN203	1-564-517-11	PLUG, CONNECTOR 2P			
		< DIODE >			
D201	8-719-058-03	DIODE SEL5423E-TP15 (POWER)			
**********					
	1-680-713-13	MAIN BOARD			
		**********			
		< CAPACITOR >			
⚠C2	1-113-924-11	CERAMIC	0.0047uF	20.00%	250V
C101	1-126-964-11	ELECT	10uF	20.00%	50V
C103	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C104	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C301	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C303	1-126-933-11	ELECT	100uF	20.00%	16V
C304	1-136-153-00	FILM	0.01uF	5%	50V

Ref. No.	Part No.	Description			Remarks
C305	1-126-967-11	ELECT	47uF	20.00%	50V
C306	1-126-967-11	ELECT	47uF	20.00%	50V
C307	1-136-169-00	MYLAR	0.22uF	5.00%	50V
C308	1-136-169-00	MYLAR	0.22uF	5.00%	50V
C309	1-126-934-11	ELECT	220uF	20.00%	10V
C310	1-126-949-11	ELECT	220uF	20.00%	35V
C311	1-126-963-11	ELECT	4.7uF	20.00%	50V
C312	1-126-964-11	ELECT	10uF	20.00%	50V
C320	1-102-110-00	CERAMIC	220PF	10%	50V
C401	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C402	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C403	1-126-974-11	ELECT	3300uF	20.00%	50V
C404	1-126-974-11	ELECT	3300uF	20.00%	50V
C405	1-104-665-11	ELECT	100uF	20.00%	25V
C406	1-104-665-11	ELECT	100uF	20.00%	25V
		< CONNECTOR >			
CN1	1-564-321-00	PIN, CONNECTOR 2P			
* CN2	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
CN101	1-785-093-11	PIN, CONNECTOR 8P			
* CN301	1-565-792-11	PIN, CONNECTOR 2P			
		< DIODE >			
D301	8-719-991-33	DIODE 1SS133T-77			
D302	8-719-991-33	DIODE 1SS133T-77			
D303	8-719-991-33	DIODE 1SS133T-77			
D304	8-719-991-33	DIODE 1SS133T-77			
D401	8-719-500-56	DIODE D3SBA20			
D402	8-719-991-33	DIODE 1SS133T-77			
D403	8-719-947-61	DIODE MTZJ-T-72-15B			
D404	8-719-947-61	DIODE MTZJ-T-72-15B			
		< FUSE >			
⚠F1	1-532-500-31	FUSE (T680mAL/250V)(SP,AEP,UK)			
⚠F1	1-532-502-31	FUSE (T1.25AL/250V)(E)			
⚠F1	1-533-614-11	FUSE, GLASS CYLINDERICAL (1.6A/125V)			(US,MX,CND)
⚠F2	1-532-499-31	FUSE (T400mAL/250V)(E,AUS)			
		< IC >			
IC101	8-759-634-50	IC M5218AL			
		< JACK >			
J103	1-770-377-31	JACK, PIN 1P(E)			

MAIN POWER IC SWITCH

Ref. No.	Part No.	Description				Remarks
J103	1-793-446-11	JACK, PIN 1P (LINE) (US,MX,SP,CND,AEP,UK,AUS)				
		< TRANSISTOR >				
Q301	8-729-029-86	TRANSISTOR	DTC124ESA			
Q302	8-729-119-78	TRANSISTOR	2SC2785-HFE			
Q303	8-729-178-42	TRANSISTOR	2SC2784-F			
Q304	8-729-119-78	TRANSISTOR	2SC2785-HFE			
Q401	8-729-029-66	TRANSISTOR	DTC114ESA			
		< RESISTOR >				
R110	1-249-441-11	CARBON	100K	5%	1/4W	
R111	1-249-429-11	CARBON	10K	5%	1/4W	
R112	1-249-441-11	CARBON	100K	5%	1/4W	
R113	1-249-429-11	CARBON	10K	5%	1/4W	
R114	1-247-887-00	CARBON	220K	5%	1/4W	
R115	1-249-441-11	CARBON	100K	5%	1/4W	
R116	1-249-429-11	CARBON	10K	5%	1/4W	
R117	1-247-895-00	CARBON	470K	5%	1/4W	
R208	1-249-441-11	CARBON	100K	5%	1/4W	
R211	1-249-429-11	CARBON	10K	5%	1/4W	
R212	1-249-433-11	CARBON	22K	5%	1/4W	
R213	1-249-433-11	CARBON	22K	5%	1/4W	
R216	1-247-887-00	CARBON	220K	5%	1/4W	
R301	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R302	1-249-433-11	CARBON	22K	5%	1/4W	
R303	1-249-411-11	CARBON	330	5%	1/4W	
R304	1-249-433-11	CARBON	22K	5%	1/4W	
R305	1-249-435-11	CARBON	33K	5%	1/4W	
R307	1-249-385-11	CARBON	2.2	5%	1/6W	F
R308	1-215-868-00	METAL OXIDE	680	5%	1W	
R309	1-249-433-11	CARBON	22K	5%	1/4W	
R310	1-249-433-11	CARBON	22K	5%	1/4W	
R311	1-249-441-11	CARBON	100K	5%	1/4W	
R312	1-249-441-11	CARBON	100K	5%	1/4W	
R313	1-249-437-11	CARBON	47K	5%	1/4W	
R314	1-249-430-11	CARBON	12K	5%	1/4W	
R401	1-215-892-11	METAL OXIDE	1K	5%	2W	
R402	1-215-892-11	METAL OXIDE	1K	5%	2W	
R405	1-249-429-11	CARBON	10K	5%	1/4W	
R406	1-215-894-11	METAL OXIDE	2.2K	5%	2W	
		< RELAY >				
RY301	1-515-920-11	RELAY (24V)				
		< SWITCH >				
⚠S2	1-762-753-11	SWITCH, VOLTAGE SELECTION (E)				
		< TRANSFORMER >				
⚠T1	1-435-879-11	TRANSFORMER, POWER (US,MX,CND)				
⚠T1	1-435-880-11	TRANSFORMER, POWER (SP,AEP,UK)				
⚠T1	1-435-881-11	TRANSFORMER, POWER (E,AUS)				
**********						

Ref. No.	Part No.	Description				Remarks
	1-680-717-13	POWER IC BOARD				
		**********				
		< CAPACITOR >				
C302	1-162-286-31	CERAMIC	220PF	10%	50V	
		< CONNECTOR >				
CN303	1-785-088-11	PIN, CONNECTOR 6P				
		< IC >				
IC301	8-759-299-54	IC LM3886TF				
		< RESISTOR >				
R306	1-249-435-11	CARBON	33K	5%	1/4W	
**********						
	1-680-715-13	SWITCH BOARD				
		**********				
		< CAPACITOR >				
⚠C1	1-113-924-11	CERAMIC	0.0047uF	20.00%	250V	
		< CONNECTOR >				
CN3	1-564-321-00	PIN, CONNECTOR 2P				
		< SWITCH >				
⚠S1	1-554-920-11	SWITCH, PUSH (AC POWER)(1 KEY)(POWER)				
**********						
		MISCELLANEOUS				
		**********				
⚠58	1-696-845-31	CORD, POWER (AUS)				
⚠58	1-777-071-11	CORD, POWER (SP,AEP,UK)				
⚠58	1-783-525-11	CORD, POWER (TRACKING)(E)				
⚠58	1-783-820-11	CORD, POWER (US,MX,CND)				
⚠F1	1-532-500-31	FUSE (T680mAL/250V)(SP,AEP,UK)				
⚠F1	1-532-502-31	FUSE (T1.25AL/250V)(E)				
⚠F1	1-533-614-11	FUSE, GLASS CYLINDERICAL (1.6A/125V) (US,MX,CND)				
⚠F2	1-532-499-31	FUSE (T400mAL/250V)(E,AUS)				
⚠T1	1-435-879-11	TRANSFORMER, POWER (US,MX,CND)				
⚠T1	1-435-880-11	TRANSFORMER, POWER (SP,AEP,UK)				
⚠T1	1-435-881-11	TRANSFORMER, POWER (E,AUS)				
SP101	1-529-995-11	SPEAKER (20CM)				
**********						
		ACCESSORIES & PACKING MATERIALS				
		**********				
⚠	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (UK)				
	4-914-518-11	SCREW (4X14),(+)(B) TAPPING (SILVER)(CND)				

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.